

## **Galileo NIMS Thermal observations of Asteroid 951 Gaspra**

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The Near Infrared Mapping Spectrometer (NIMS) onboard the Galileo spacecraft performed spectral and thermal imaging of asteroid 951 Gaspra during the spacecraft flyby on October 29, 1991. Analysis of the spatially resolved thermal images give peak brightness temperatures of 225 to 235 K, depending on the emissivity assumed. Estimated color temperatures from a 3-wavelength (4.43, 4.71, and 4.99  $\mu\text{m}$ ) least-squares fit are similar. These results have been compared with a thermal model of asteroid 951 Gaspra at the time of the 1991 Galileo encounter, constructed using the KRC program (Kieffer et al., J. Geophys. Res. 82, 4249, 1977). The observed peak temperatures suggest that the thermal behavior of the surface of Gaspra can not be simulated with either a "bare rock" or "deep regolith" model. The implied thermal inertia is  $\sim 0.0025 \text{ cal cm}^{-2} \text{ sec}^{-1/2} \text{ K}^{-1}$ , somewhat more than twice the value typical for the Moon. These results suggest the existence of a modest regolith on Gaspra, which could be a thin dust layer, a combination of dusty patches and rock outcrops, or a rubble pile mixture of fine and coarse material. Additional NIMS measurements of the hemispherically averaged temperature on Gaspra as the spacecraft approached the asteroid will also be reported. Differences resulting from other choices for thermo-physical parameters in the model will be explored. Similar measurements are currently being planned for the Galileo encounter with asteroid 243 Ida, which will occur in late August of 1993. This work was supported by NASA through the Galileo Project at JPL.